L 14011-65 EWT(l)/EWG(k)/T/EWA(h) Pz-6/Peb IJP(c)/AFTC(a)/AEDC(b)/AFWL/ ASD(p)-3/AFETR/ASD(a)-5/AFTC(b)/RAEM(c)/ESD(t) AT
ACCESSION NR: AP4048887 S/0109/64/009/011/2022/2026

AUTHOR: Komarovskikh, K. F.; Stafeyev, V. I. 21 B

TITLE: Negative resistance in multiple layer ($p-n^+$ $n-n^+$)- and ($p-n-n^+$ $n-n^+$ p)-type structures

SOURCE: Radiotekhnika i elektronika, v. 9, no. 11, 1964, 2022-2026

TOPIC TAGS: semiconductor, multilayer semiconductor, negative resistance

ABSTRACT: A semiconductor-testing device developed by the authors was used to investigate both four-layer ($p-n^+$ $n-n^+$) and five-layer ($p-n^+$ $n-n^+$ p) diodes. For this experiment, two drops of In and Ga alloy were fused onto an n-type Ge plate, with a resistivity of 2.5 ohm·cm and a thickness of approx 0.17 mm, which had been treated in arsenic vapor. The thickness of the mean n^+ region was about 2 μ, while the p-n junction diameter was 0.5 mm. In both the four- and five-layer structures, two regions of negative resistance were observed in volt-ampere characteristics when forward bias was applied; when reverse bias was applied, the specimens showed ordinary

Card 1/2

L 11011-65
ACCESSION NR: AP4048887

p-n-junction responses. The negative-resistance phenomenon is analyzed, and oscillograms are presented illustrating the effect. Orig. art. has: 4 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR (Physicotechnical Institute, AN SSSR)

SUBMITTED: 18Jul63 ENCL: 00 SUB CODE: EC, EM

NO REF SOV: 003 OTHER: 002 ATD PRESS: 3133

Card 2/2

L 19057-65 EWT(1)/EWG(k)/EEC(k)-2/T/EEC(b)-2/EWA(h) Pm-4/Pz-6/Peb IJP(c)/ ASD(a)-5/RAEM(c)/AFWL/ESD(t)/ESD(c)/ESD(dp)
ACCESSION NR: AP4040913 S/0109/64/009/006/1034/1039

AUTHOR: Karakushan, E. I.; Stafeyev, V. I.; Shtager, A. P.

TITLE: Two-base magnetodiode

SOURCE: Radiotekhnika i elektronika, v. 9, no. 6, 1964, 1034-1039

TOPIC TAGS: semiconductor, semiconductor device, semiconductor diode, double base diode, magnetodiode, double base magnetodiode

ABSTRACT: The magnetodiode is characterized by d/L = 3 to 5, while in conventional diodes d < L; here, d is the distance between the p-n junction and the ohmic contact and L is the diffusion-displacement length. The double-base magnetodiode can be designed with a sensitivity to a magnetic field higher than that of the conventional magnetodiode. Symmetrical and nonsymmetrical double-base magnetodiodes were prepared from n-Ge with a resistivity of 40 ohm-cm. These characteristics were measured: (1) Base-to-base: current vs. voltage at

Card 1/2

L 19057-65
ACCESSION NR: AP4040913

0, 2, 3, 4, 5, and 6 kgauss; base-to-base resistance, breakdown voltage, breakdown current, and minimum voltage vs. magnetic flux density; (2) Emitter-to-principal-base; current vs. voltage at the above gauss values in both symmetrical and nonsymmetrical diodes; breakdown voltage, cutoff voltage, residual voltage, and residual resistance vs. magnetic flux density. For better characteristics, the use of a high-resistivity and high carrier-mobility material, such as GaAs, is recommended. Orig. art. has: 7 figures.

ASSOCIATION: none

SUBMITTED: 05Oct62 ENCL: 00

SUB CODE: EC NO REF SOV: 007 OTHER: 001

Card 2/2

L 13562-65 AFWL/ASD(a)-5
ACCESSION NR: AP4046685 S/0109/64/009/010/1840/1848

AUTHOR: Kurfirst, S. Ye.; Stafeyev, V. I.

TITLE: Static characteristics of a transistor having an imperfect collector p-n junction

SOURCE: Radiotekhnika i elektronika, v. 9, no. 10, 1964, 1840-1848

TOPIC TAGS: transistor, PN junction, collector PN junction, transistor characteristic

ABSTRACT: The input and output characteristics of a collector-leakage transistor invented by W. Münch and H. Salow (Z. angew. Phys., 1956, 8, 3, 114) are estimated and experimentally determined. The leakage is represented by a small-area ohmic contact between the p- and n-regions of a p-n junction (see Enclosure 1). Due to leakage, the characteristics have a negative-resistance segment. Formulas describing the input and output current-voltage

Card 1/3

L 13562-65
ACCESSION NR: AP4046685

characteristics for a common-base circuit are developed. The effects of the emitter voltage, base resistance, leakage resistance, emitter saturation current, and base thickness on the output current-voltage characteristic were experimentally investigated; test transistors were made from p-Ge with a resistivity of 30—40 ohms-cm and a diffusion length of 1—2 mm; p-n junctions were formed by fusing a Pb,Sb-alloy wire; base contact, by a Pb,In alloy. Good agreement between theoretical and experimental results is claimed. Orig. art. has: 8 figures and 22 formulas.

ASSOCIATION: none

SUBMITTED: 26Jun63 ENCL: 01

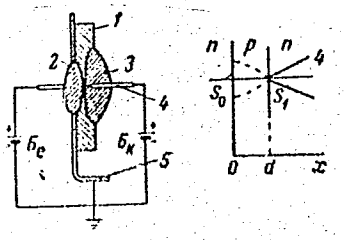
SUB CODE: EC NO REF SOV: 002 OTHER: 008

Card 2/3

ACCESSION NR: AP4046685

ENCLOSURE: 1

0



Design

Leakage-field distribution in the base

Transistor with a collector leakage

1 - p-type Ge, Base
2 - emitter
3 - collector
4 - point
5 - base contact

Card 3/3

KOMAROVSKIKH, K.F.; SIAFEYEV, V.I.

Negative resistance in multilayer $p-n^{+}-n-n^{+}$ and $p-n^{+}-n-p$ structures. Radiotekh. i elektron. 9 no.11:2022-2030 N '64. (MIRA 17:12)

1. Fiziko-tekhnicheskiy institut imeni Ioffe AN SSSR.

ACCESSION NR: AP4048888 S/0109/64/009/011/2027/2030

AUTHOR: Karakushan, E. I.; Stafeyev, V. I.

TITLE: Magnetodiodes with negative resistance

SOURCE: Radiotekhnika i elektronika, v. 9, no. 11, 1964, 2027-2030

TOPIC TAGS: L diode, n type germanium, magnetic sensitivity, magnetodiode

ABSTRACT: The results of investigations of negative resistance in L-diodes are discussed. The specimens used were made from n-type Ge ($\rho \sim 50$ ohm.cm). In the initial material, conductivity was determined exclusively by the ionized-impurity content, whose concentration was much higher than that of the surface recombination centers; the dependence of current and discontinuity voltage on the magnetic field became significant only after the occurrence of discontinuity (see Fig. 1 of the Enclosure). At room temperature, the forward current in negative-resistance diodes may drop by more than half in a field of 600 gs, while sensitivity may exceed 4 mv/gs. Investigations at 77K showed a degree of magnetic sensitivity in all diodes which, under identical conditions, was much higher than that of the initial Ge single crystals. At this temperature, the variation in voltage in a diode with a field of 20 gs and a current of 90 mamp was 0.3 v, which corresponds to a magnetic

Card 1/3

ACCESSION NR: AP4048888

sensitivity of 15 mv/gs. Moreover, these investigations have demonstrated anomalous volt-ampere characteristics in diodes which were more sensitive to the magnetic field. In the absence of a magnetic field, the volt-ampere characteristics had two regions of negative resistance and both current and voltage ambiguity. After the discontinuity point, saturation accompanied by a decrease in current and an increase in voltage occurred; these phenomena do not fit the usual L-diode model. The authors attempt to explain this anomalous behavior by suggesting that the surface recombination rate at first decreases when there is an increase in nonequilibrium carrier concentration; at high currents, this rate either starts to increase or the volume lifetime begins to decrease. They admit, however, that their suggestion requires further study. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 29Jul63 ENCL: 01 SUB CODE: EC

NO REF SOV: 007 OTHER: 004 ATD PRESS: 3150

Card 2/3

ENCLOSURE: 01

ACCESSION NR: AP4048888

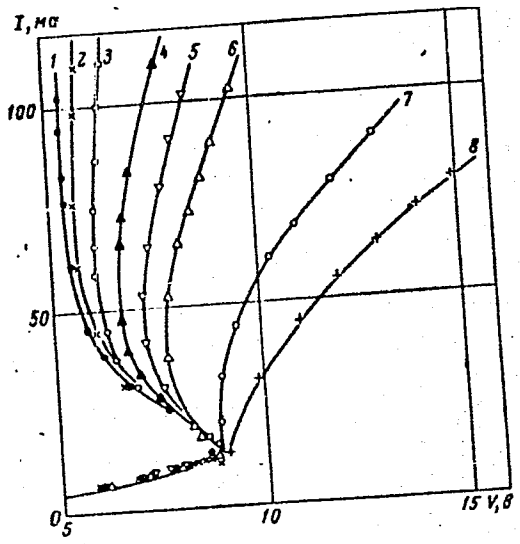


Fig. 1. Forward volt-ampere characteristics of a magnetodiode at 77K

1 - Zero field; 2 - 20 gs; 3 - 40 gs; 4 - 60 gs; 5 - 80 gs; 6 - 100 gs; 7 - 150 gs; 8 - 200 gs.

Card 3/3

L 8974-66 EWT(1)/EWT(m)/EWP(t)/EWP(b)/EWA(m)-2 IJP(c) JD/AT

ACC NR: AP5027423 SOURCE CODE: UR/0181/65/007/011/3404/3406

AUTHOR: Vorob'yev, L. Ye.; Mizgireva, L. P.; Soltamov, U. B.; Stafeyev, V. I.; Shturbin, A. V.

ORG: Leningrad Polytechnical Institute im. M. I. Kalinin (Leningradskiy politekhnicheskiy institut)

TITLE: Variation in transmittance of *p*-germanium in strong electric fields

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3404-3406

TOPIC TAGS: germanium, semiconductor, hole transition, electron transition, electric field, absorption spectrum

ABSTRACT: Preliminary data are given on the change in transmittance of *p*-type germanium in electric fields with intensities from 0.5 to 2.1 kv/cm. Curves are given for the variation in the hole absorption cross section as a function of wavelength at a lattice temperature of 88°K, and for modulation of the incident radiation as a function of its wavelength. A maximum is observed in the 3 μ region, and a minimum in the 4 μ region. These extrema correspond to a reduction and increase respectively in the transmittance of germanium due to transitions from the heavy hole band to the cleavage band. A third peak in the neighborhood of 4.7 μ is caused by transitions from the light hole band to the cleavage band, and a fourth near 8 μ is the result of

Card 1/2

L 8974-66

ACC NR: AP5027423

transitions between the heavy and light hole bands. This fourth extremum corresponds to maximum modulation in the region of greatest change in the absorption cross section. Orig. art. has: 2 figures.

SUB CODE: 20,07/ SUBM DATE: 20Apr65/ ORIG REF: 000/ OTH REF: 006

Card 2/2

L 31042-65
ACCESSION NR: AP5002910 S/0109/65/010/001/0147/0156

AUTHOR: Popova, M. V.; Smolko, G. G.; Garyainov, S. A.; Stafeyev, V. I.

TITLE: Static characteristics of N-transistors

SOURCE: Radiotekhnika i elektronika, v. 10, no. 1, 1965, 147-156

TOPIC TAGS: transistor, N-transistor

ABSTRACT: A detailed exploration of the characteristics of an N-transistor (proposed by V. I. Stafeyev, et al., Rad. i elektronika, 1962, 7, 8, 1404) reveals that this device is kindred to the n-p-n-p transistor. Static input and output characteristics of N-transistors for common-base, common-emitter, and common-collector circuits are described. The input characteristics are voltage-ambiguous (S-type); the output characteristics in the common-base and common-emitter circuits are current-ambiguous (N-type); in the common-collector circuit, the characteristics are practically single-valued. Experimentally

Card 1/2

L 31042-65

ACCESSION NR: AP5002910

determined families of characteristics of diffusion-alloy N-transistors are presented. Orig. art. has: 8 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-Technical Institute, AN SSSR)

SUBMITTED: 09Sep63 ENCL: 00 SUB CODE: EC

NO REF SOV: 002 OTHER: 002

Card 2/2

L 45259-65 EEC(b)-2/EEC(k)-2/EWA(h)/EWT(1)/T Pm-4/Pz-6/Peb IJP(c) AT
ACCESSION NR: AP5010102 UR/0109/65/010/004/0700/0702

36
8

AUTHOR: Purtskhvanidze, A. A.; Stafeyev, V. I.

TITLE: Controlling the current of a four layer structure by a field in the base region

SOURCE: Radiotekhnika i elektronika, v. 10, no. 4, 1965, 700-702

TOPIC TAGS: four layer transistor, semiconductor, N transistor

ABSTRACT: A new N-transistor (see Fig 1 of the Enclosure) with two collector contacts is investigated. The test devices were prepared from p-Ge having a resistivity of 5 ohm-cm. The new device can be turned on by a positive voltage pulse of 0.2 v or higher, after which the conduction state remains. To turn the device off, a negative 0.2-v pulse is necessary. Separate input and output and switching of the device by an input-circuit signal are held as its advantages. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 24Feb64 ENCL: 01 SUB CODE: EC

NO REF SOV: 003 OTHER: 000

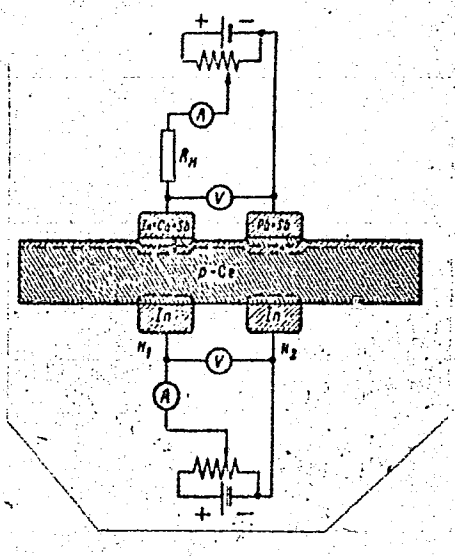
Card 1/2

L 45259-65

ACCESSION NR: AP5010102

ENCLOSURE: 1

A new N-transistor with two current contacts and a circuit for measuring current-voltage characteristics



BJB

Card 2/2

L 60879-65
ACCESSION NR: AP5020126

UR/0109/65/010/008/1480/1485
621.382.333.4

10
B

AUTHOR: Smolko, G. G.; Osipov, V. V.; Stafeyev, V. I.; Garyainov, S. A.; Popova, M. V.

TITLE: N-transistors as active circuit elements

SOURCE: Radiotekhnika i elektronika, v. 10, no. 8, 1965, 1480-1485

TOPIC TAGS: N transistor, common emitter circuit, p n p n junction, p n p n transistor

ABSTRACT: A description is given of the use of N-transistors in common-emitter circuits. Applications include switching circuits, converters, pulse generators, and flip-flops. The transistor has a p-n-p-n structure between emitter and base, so that its input volt-ampere characteristics are of the S type (see Fig. 1 of the Enclosure). The low value of the switching voltage depends on the collector current and varies within 0.2—2 v. The output volt-ampere characteristic (Fig. 2) shows a sharp decrease in negative resistance with increase in bias. Voltage required for maximum current does not exceed 0.2 v; collector current can reach 30—50 mamp. Within a wide range of collector voltages, minimum collector current is in tens of microamperes. Orig. art. has: 10 figures. [DW]

Card 1/4

L 60879-65

ACCESSION NR: AP5020126 0

ASSOCIATION: none

SUBMITTED: 11May64 ENCL: 02 SUB CODE: EC

NO REF SOV: 002 OTHER: 000 ATD PRESS: 4063

Card 2/4

L 60879-65
ACCESSION NR: AP5020126

ENCLOSURE: 01

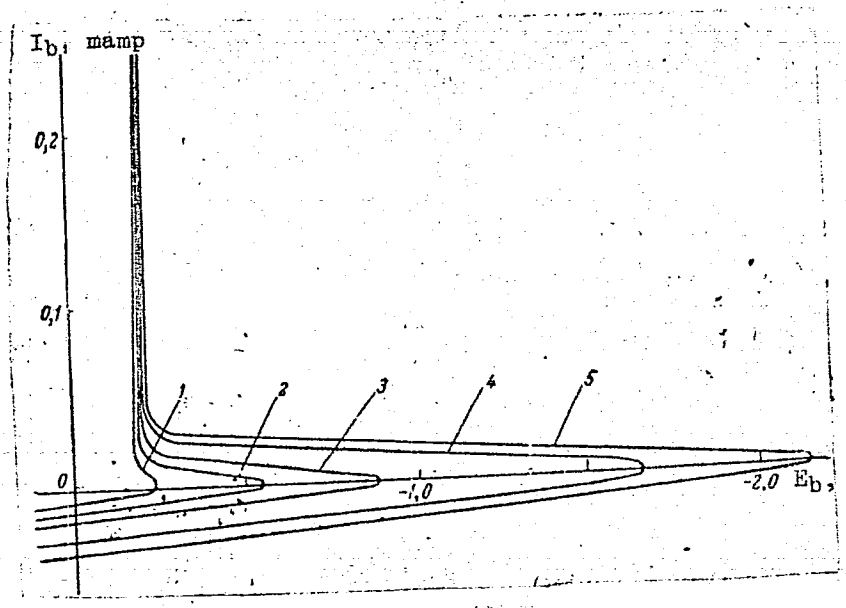


Fig. 1. Input characteristics at various collector currents (T = 20.5C)

1 - 0.02 mamp;
2 - 0.03 mamp;
3 - 0.05 mamp;
4 - 0.08 mamp;
5 - 0.1 mamp.

Card 3/4

L 60879-65

ACCESSION NR: AP5020126

ENCLOSURE: 02

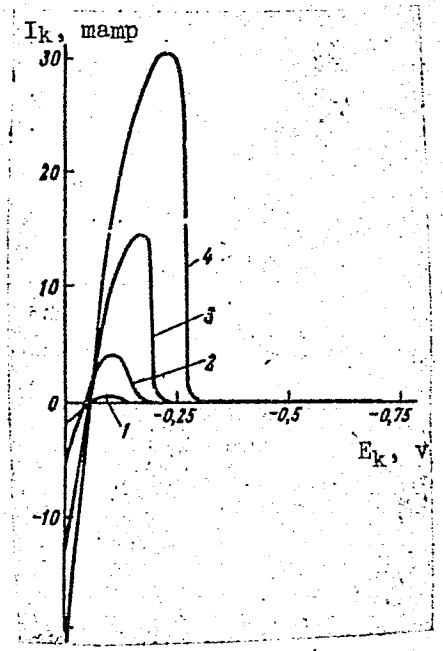


Fig. 2. Output characteristics at various base biases

1 - -0.25 v; 2 - -0.3 v;
3 - -0.35 v; 4 - -0.4 v.

Card 1/1

L 8245-66

ACC NR: AP5022444 SOURCE CODE: UR/0109/65/010/009/1730/1733

AUTHOR: Shtager, A. P.; Stafeyev, V. I.

ORG: none

TITLE: Current gain of a double-base diode

SOURCE: Radiotekhnika i elektronika, v. 10, no. 9, 1965, 1730-1733

TOPIC TAGS: semiconductor diode, double base diode

ABSTRACT: A theoretical analysis of the phenomena transpiring in a double-base diode, made from an intrinsic-conductivity semiconductor material, yields this formula for the current gain: Examination of this formula proves that the current gain may considerably exceed its maximum value computed

$$\alpha = 1 + \left[\frac{(I_0 + 2I_{66}) R_0 \operatorname{sh} \frac{l_1}{L} B}{\frac{l_1}{L}\left(\operatorname{sh}^2 \frac{l_1}{L} + \frac{I_2^2}{I_1^2} \right)(I_2 + I_0) R_T} - 1 \right] \frac{R_*}{2R_T + R_B}. \quad (7)$$

Card 1/2 UDC: 621.382.333.32

L 8245-66

ACC NR: AP5022444

from W. Shockley et al. formulas (BSTJ, 1949, 28, 3, 344). Formula (7) is in agreement with the experimental results reported by several American authors (e.g., J. R. Arthur et al., Proc. Phys. Soc., 1956, B-69, 4, 705) without resorting to additional assumptions about some mechanism that reduces the effective mobility of minority carriers. Formula (7) was qualitatively corroborated by authors' experiments with nonsymmetrical double-base diodes made from n-Ge with a resistivity of 40 ohms·cm. Orig. art. has: 4 figures and 8 formulas.

SUB CODE: 09 / SUBM DATE: 30May64 / ORIG REF: 002 / OTH REF: 004

Card 2/2

L 10390-66 EWT(1)/EEC(k)-2/T/EWA(h) IJP(c)
ACC NR: AP5026909 SOURCE CODE: UR/0109/65/010/010/1893/1899

AUTHOR: Popova, M. V.; Stafeyev, V. I.

ORG: none

TITLE: Effect of temperature on static current-voltage characteristics of N-transistors

SOURCE: Radiotekhnika i elektronika, v. 10, no. 10, 1965, 1893-1899

TOPIC TAGS: four region transistor, current voltage characteristic

ABSTRACT: An experimental investigation of the effect of temperature (within -40+40C) on the static current-voltage characteristics of common-emitter, common-base, and common-collector 4-region transistors is reported. In the first two circuits, a constant collector current of 10 microamp was held. In the third circuit, a constant emitter voltage of 2.4 v was maintained. Input and

UDC: 621.382.3.001

Card 1/2

L 10390-66
ACC NR: AP5026909

output characteristics for 8 temperatures within the above range are presented. In the common-emitter circuit, the residual voltage falls off almost linearly with the increasing temperature; at +20C, the negative resistance vanishes; maximum collector current increases 20 times within −40+40C. In the common-base circuit, the residual voltage falls off, too, almost linearly; in some specimens at lower temperatures, the collector current reversed under closed-transistor conditions. Orig. art. has: 7 figures.

SUB CODE: 09 / SUBM DATE: 20Jun64 / ORIG REF: 003

jw
Card 2/2

L 10233-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b)/EWA(h) IJP(c) JD/AT

ACC NR: AP6000569 SOURCE CODE: UR/0109/65/010/012/2262/2264

AUTHOR: Purtskhvanidze, A. A.; Stafeyev, V. I.

ORG: none

TITLE: Current-voltage characteristics of 4-region structures with two segments of negative resistance

SOURCE: Radiotekhnika i elektronika, v. 10, no. 12, 1965, 2262-2264

TOPIC TAGS: semiconductor device, semiconductor research

ABSTRACT: An experimental investigation of the relations between the gain α, the spreading resistance, and the I-V characteristic of a nonuniform large-area p-n junction is reported. A special p-Ge (2 x 2 mm, 0.3-mm thick, 5-ohm-cm) double-4-region structure, (see Fig. 1), with a common emitter n-region and common base p-region was prepared and tested. The I-V characteristics of separate structures

Card 1/4 UDC: 621.382.13

L 10233-66
ACC NR: AP6000569

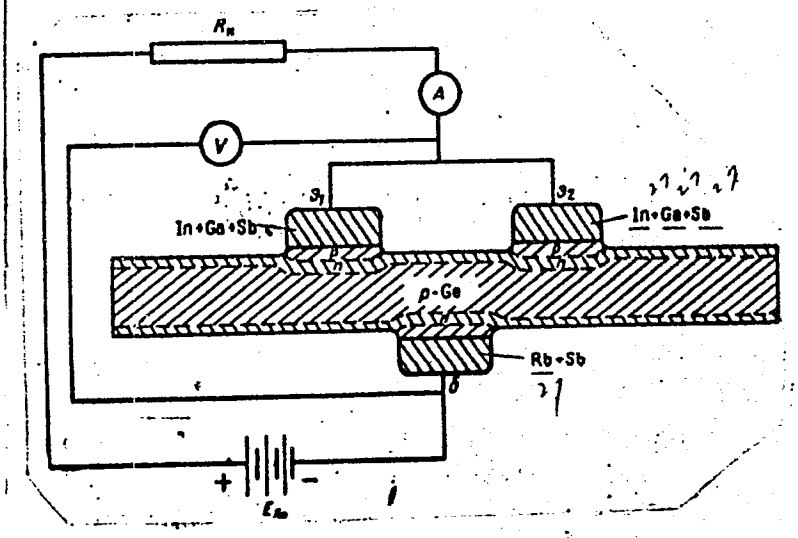


Fig. 1. Double 4-region structure

Card 2/b

L 10233-66

ACC NR: AP6000569

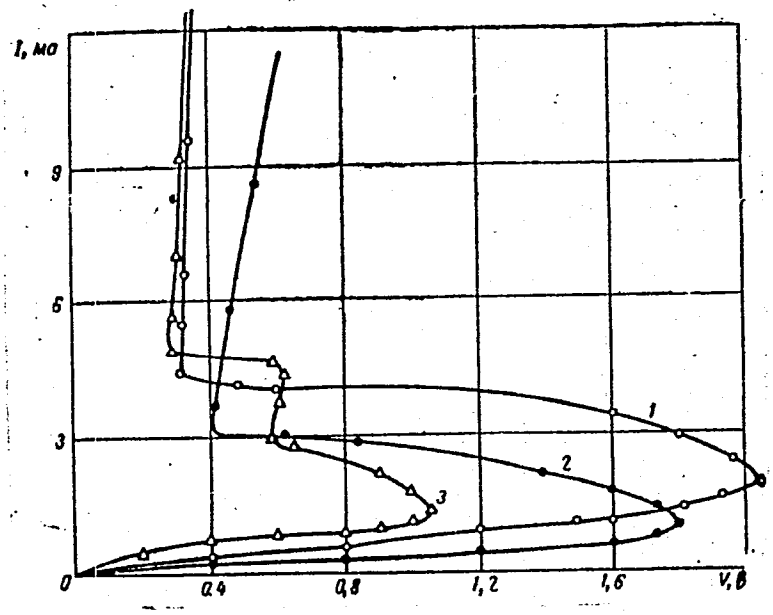


Fig. 2. I-V characteristics

1 and 2 - Individual emitters;
3 - both emitters connected in parallel.

Card 3/4

L 10233-66

ACC NR: AP6000569 O

have a conventional single-negative-resistance-segment shape. With both structures in parallel, two segments of negative resistance appear, (see Fig. 2). Orig. art. has: 2 figures. [03]

SUB CODE: 09/ SUBM DATE: 07Dec64/ ORIG REF: 006/ OTH REF: 003/ ATD PRESS: 4163

Card 1/1

FILARETOV, G.A.; STAFEYEV, V.I.; CHERKASHIN, G.A.; LUR'YE, M.S.; BUBNOV, Yu.Z.; ASNINA, Zh.S.

Study of the negative impedance of Al_2O_3-- metal contacts.

Radiotekh. i elektron. 11 no. 2:298-301 F '66
(MIRA 19:2)

SMOLIN, O.G.; OSIPOV, V.V.; STAFEYEV, V.I.

Device for converting pulse amplitude of pulse input duration into a pulse train. Radiotekh. i elektron. 11 no. 2:357-360 F '66 (MIRA 19:2)

1. Submitted June 4, 1965.

L 21236-66 EWT(m)/EWP(t) IJP(c) JD
ACC NR: AP6003816 SOURCE CODE: UR/0181/66/008/001/0280/0283

AUTHORS: Karimova, I. Z.; Sondayevskiy, V. P.; Stafeyev, V. I.

ORG: none

TITLE: Negative photoconductivity of gold-doped germanium in strong electric fields

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 280-283

TOPIC TAGS: germanium, semiconductor conductivity, photoconductivity, electron energy level, volt ampere characteristic

ABSTRACT: The authors investigated the properties of n-type germanium doped with gold, in which the 0.2 ev level was partially filled with electrons of the compensating donor impurity. The purpose of the study was to assess the influence of the degree of filling of the 0.2 ev gold level on the dependence of the current on the electric field intensity. The appearance of the negative resistance was monitored by watching the change of the dc component of the current on an oscilloscope screen. The dark current of the sample remained practically

Card 1/3

L 21236-66
ACC NR: AP6003816

constant in fields 1 to 3 kv/cm, this being attributed to saturation of the electron drift velocity. The current began to increase at intensities of about 4.4 kv/cm, accompanied by decrease in the sample voltage. The sharp increase in the current and the negative resistance (of S type) can be explained by assuming injection of minority carriers from the surface. Two sections of negative differential resistance of N type are observed at fields from 4.5 to 4.7 kv/cm, but not for all samples. The two sections of negative resistance are possibly due to the inhomogeneity of the field in the sample. The further behavior of the curve (increase of current and decrease of sample voltage) is connected with minority-carrier injection. Light increases the current at low field intensities (compared with the dark value), and decreases it at high intensities. This negative photoconductivity can be explained by assuming that electrons produced by the light used towards the surface and eliminate the inverse layer on it. This stops the injection of the holes from the surface and eliminates the increase in current due to the hole injection. The absorption of the light is proportional to the concentration of the electrons at the 0.2 ev level. As soon as the electrons become captured by the ionized

Card 2/3

gold centers in the strong field, the absorption of light decreases, so that the concentration of the electrons in the conduction band remains practically constant. This explains the absence of negative resistance regions of N type on the characteristics obtained during illumination. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 09Aug65/ ORIG REF: 001/ OTH REF: 004

L 21284-66 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AP6007517 SOURCE CODE: UR/0109/66/011/002/0357/0360

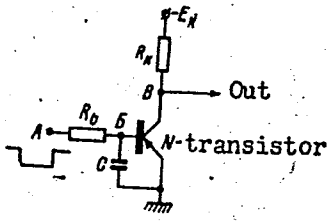
AUTHOR: Smolko, G. G.; Osipov, V. V.; Stafeyev, V. I.

ORG: none

TITLE: Converter of the pulse height or duration into a sequence of pulses

SOURCE: Radiotekhnika i elektronika, v. 11, no. 2, 1966, 357-360

TOPIC TAGS: pulse converter, analog digital converter



ABSTRACT: A simple circuit (see figure) containing an N-transistor for converting pulse height or duration in a sequence of pulses is suggested. The number of output pulses is given by: $n = \tau(U - U_0)/(U_i - U_0)R_0C$, where U and τ are the height and duration of the input pulse; U_i and U_0 are switching-threshold and after-switching voltages, respectively. Conversion of the duration into pulse sequence is strictly linear; height into sequence, slightly nonlinear. Oscillograms taken on an experimental hookup are shown. Orig. art. has: 3 figures and 1 formula. [03]

SUB CODE: 09 / SUBM DATE: 04Jun65 / ORIG REF: 002 / ATD PRESS: 4218

Card 1/1 dda

UDC: 621.374.38

L 27521-66 EWT(1)/EWT(m)/EWP(t) IJP(c) JD/HW/JG/JH

ACC NR: AP6007508 SOURCE CODE: UR/0109/66/011/002/0298/0301

AUTHOR: Filaretov, G. A.; Stafeyev, V. I.; Cherkashin, G. A.; Lur'ye, M. S.; Bubnov, Yu. Z.; Asnina, Zh. S.

56
B

ORG: none

TITLE: Investigation of the negative resistance of Al_2O_3 -metal contacts

SOURCE: Radiotekhnika i elektronika, v. 11, no. 2, 1966, 298-301

TOPIC TAGS: semiconductor, semiconductor device, semiconductor research

ABSTRACT: The N-type negative-resistance region of Al_2O_3 -Me contacts was investigated by measuring current-voltage characteristics of film-type contacts in which the thickness of the dielectric varied from 100 to 500 Å. The Al_2O_3 layer was formed by oxidizing Al films obtained on glass by vaporization in vacuum. The upper electrode was formed by vacuum-spraying Cu, Sn, In, Au, Ni, Al. Measurements were conducted in air and in vacuum. With In, Al, Sn electrodes, the negative resistance was observed with both polarities of the applied voltage; with the Al electrode, the negative resistance could be detected only in vacuum. With Cu, Ni,

Card 1/2 UDC: 621.382.27.001.5

L 27521-66

ACC NR: AP6007508

0

Au electrodes, the negative resistance was observed only in the forward branch of the current-voltage characteristic. In all cases, the maximum current decreased and the negative resistance increased with the increasing layer thickness. Qualitatively, the I-V function could be explained by the Schottky emission law. Electron capture by multicharge centers is assumed to be responsible for the mechanism of the negative resistance. Orig. art. has: 5 figures.

SUB CODE: 09, 20 / SUBM DATE: 16Nov64 / ORIG REF: 002 / OTH REF: 001

Card 2/2 BKG

ACC NR: AP6031021 SOURCE CODE: UR/0109/66/011/009/1624/1633

AUTHOR: Komarovskikh, K. F.; Stafeyev, V. I.

28

ORG: none

TITLE: Negative resistance in some semiconductor structures [Reported at the 2nd All-Union Conference on p-n junctions in semiconductors, Riga, 1964]

SOURCE: Radiotekhnika i elektronika, v. 11, no. 9, 1966, 1624-1633

TOPIC TAGS: negative resistance, semiconductor device

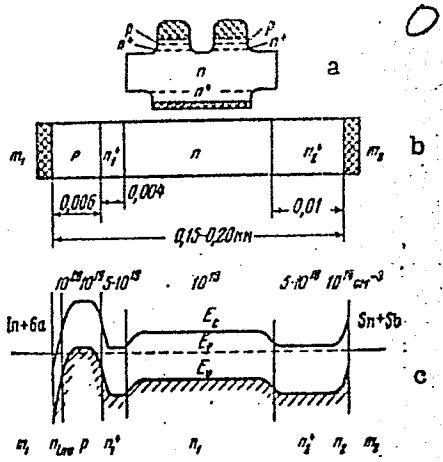
ABSTRACT: This is a continuation of a previous authors' work (Rad. i elektronika, 1964, 9, 11, 2022). I-V characteristics of Ge-based In-p-n^+-n-n^+-Sn and In-p-n^+-n-n^+-In structures were experimentally studied. The resistivity of n-Ge was 2.5, 8.5, and 17 ohms·cm. Variegation of types of I-V characteristics is explained by the action of several 4-layer substructures created by the potential barriers across p-n, h-l and metal-semiconductor junctions. A negligible (5—10% variation of current or voltage) effect of strong (up to 10000 lux) illumination of specimens was observed. The origin of negative resistance in the avalanche diode (J. B. Gunn,

 UDC: 621.382.011.222:546.28

L 10468-67

ACC NR: AP6031021

Proc. Phys. Soc., London, 1956, B66, 440, 781), the I. R. Szedon et al. diode (Solid-State Electronics, 1963, 6, 6, 631), the W. Ridner et al. diode (IEEE Trans., ED-11, 1964, 4, 136), and in some other devices is explained (at variance with the respective authors' explanations) from the single viewpoint of a 4-layer model. Orig. art. has: 3 figures and 1 table.



Structure and energy bands of the test device: a - general view; b - structure; c - band diagram allowing for metal-semiconductor contacts.

SUB CODE: 09 / SUBM DATE: 06Nov64 / ORIG REF: 006 / OTH REF: 015

Card 2/2 egk

ACC NR: AP6036382 (N) SOURCE CODE: UR/0109/66/011/011/2089/2092

AUTHOR: Sondayevskiy, V. P.; Stafeyev, V. I.

ORG: none

TITLE: Thermal N-shaped negative resistance

SOURCE: Radiotekhnika i elektronika, v. 11, no. 11, 1966, 2089-2092

TOPIC TAGS: silicon semiconductor, semiconductor research, semiconductor conductivity, low temperature research

ABSTRACT: The decreasing mobility with increasing temperature, in the region of complete impurity ionization, may be responsible for formation of an N-shaped I-V characteristic of a semiconductor heated by the current flowing through it. It is shown theoretically that the formation of an N-shaped negative-resistance segment is possible in that temperature zone where the conductivity decreases

Card 1/2

ACC NR: AP6036382

because of decreasing mobility (with a constant carrier concentration). The phenomenon was corroborated by an experiment in which 2x2x1 mm Si specimens (resistivity, 16 ohms·cm at room temperature) equipped with rectifying and anti-reverse contacts were placed in liquid nitrogen (77K), and their I-V characteristics were measured with currents as high as 170 ma; the I-V characteristics are shown. Orig. art. has: 3 figures and 8 formulas.

SUB CODE: 20, 09 / SUBM DATE: 03May65 / ORIG REF: 002 / OTH REF: 001

Card 2/2

ACC NR: AP7002681 SOURCE CODE: UR/0109/67/012/001/0165/0167

AUTHOR: Purtskhvanidze, A. A.; Stafeyev, V. I.

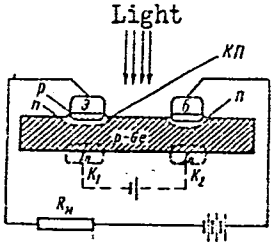
ORG: none

TITLE: Light controlled four-region structures

SOURCE: Radiotekhnika i elektronika, v. 12, no. 1, 1967, 165-167

TOPIC TAGS: NPNP device, germanium semiconductor ~~device~~, semiconductor research, photosensitivity

ABSTRACT: The results of experiments with light-controlled NPNP devices are reported. Unlike light-controlled Si-switches investigated by other researchers (e.g., E. K. Howell, Electronics, 1964, 37, 15, 13), the basic material used was p-Ge with a resistivity of 5 ohms-cm. Prepared by the conventional diffusion-and-alloy process, the 4-region experimental devices (see figure) could be illuminated on either side by a 10-w incandescent lamp held at a distance of 25 cm or more. It was found that: (1) The breakover voltage decreases with increasing illumination (V-I characteristic); a very small illumination is needed to switch the device at a near-breakover point; (2) Photosensitivity as high as 35 amp/lm was obtained;



Card 1/2

UDC: 621.383.52

ACC NR: AP7002681

maximum sensitivity was observed when the collector-junction area was illuminated; (3) A switching time of a few microseconds was attained when sufficient voltage and illumination were applied; (4) The photosensitivity and switching time also depend on the base-region field produced by applying a bias between K_1 and K_2 (see figure); a bias of 30 mv doubled the photocurrent. Orig. art. has: 3 figures and 1 formula.

SUB CODE: 09 / SUBM DATE: 08Jun65 / ORIG REF: 002 / OTH REF: 006

Card 2/2

APIN, A.Ya.; AFANASENKOV, A.N.; DIMZA, G.V.; STAFEYEV, V.N.

Sympathetic detonation. Dokl. AN SSSR 147 no.5:1141-1143 D '62.
(MIRA 16:2)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N. Kondrat'yevym.

(Detonation)

L 43094-66 EWT(m)/EWP(w)/T/EWP(t)/ETI JD/EM

ACC NR: AR6014383 (A,N) SOURCE CODE: UR/0137/65/000/011/I044/I044

AUTHORS: Stafeyeva, A. D.; Tushinskaya, K. I.

TITLE: The role of fine structure in the strength of alloys

SOURCE: Ref. zh. Metallurgiya, Abs. 11I307

REF SOURCE: Sb. dokl. k Novosib. nauchno-tekhn. konferentsii po mashinostr. Ch. 2. Novosibirsk. 1964, 133-140

TOPIC TAGS: alloy steel, material deformation, steel structure

ABSTRACT: The influence of cold deformation on the change in the characteristics of the fine structure of granules and hardness of post-eutectic steel St U8 was investigated. Specimens of 18 mm diameter and 20 mm in height were subjected to static compression to different degrees of deformation. The changes before and after deformation in the perlite structure were investigated metallographically, and the deformation of the second kind $\left(\frac{\Delta a}{a}\right)$, the extent of regions of coherent scattering D (by means of the installation URS-50I), and the change in H_v with

Card 1/2 UDC: 539.4.017:669.14.018.2

L 43094-66

ACC NR: AR6014383

increasing deformation were determined. During cold deformation, the platelets of the cementite component of perlite are crushed and decrease in size. With increase in deformation, the magnitude of H_v and $\left(\frac{\Delta a}{a}\right)$ increases and that of D decreases. The results obtained on heterogeneous alloys are identical to the results of other authors on pure metals. V. Ivanova [Translation of abstract]

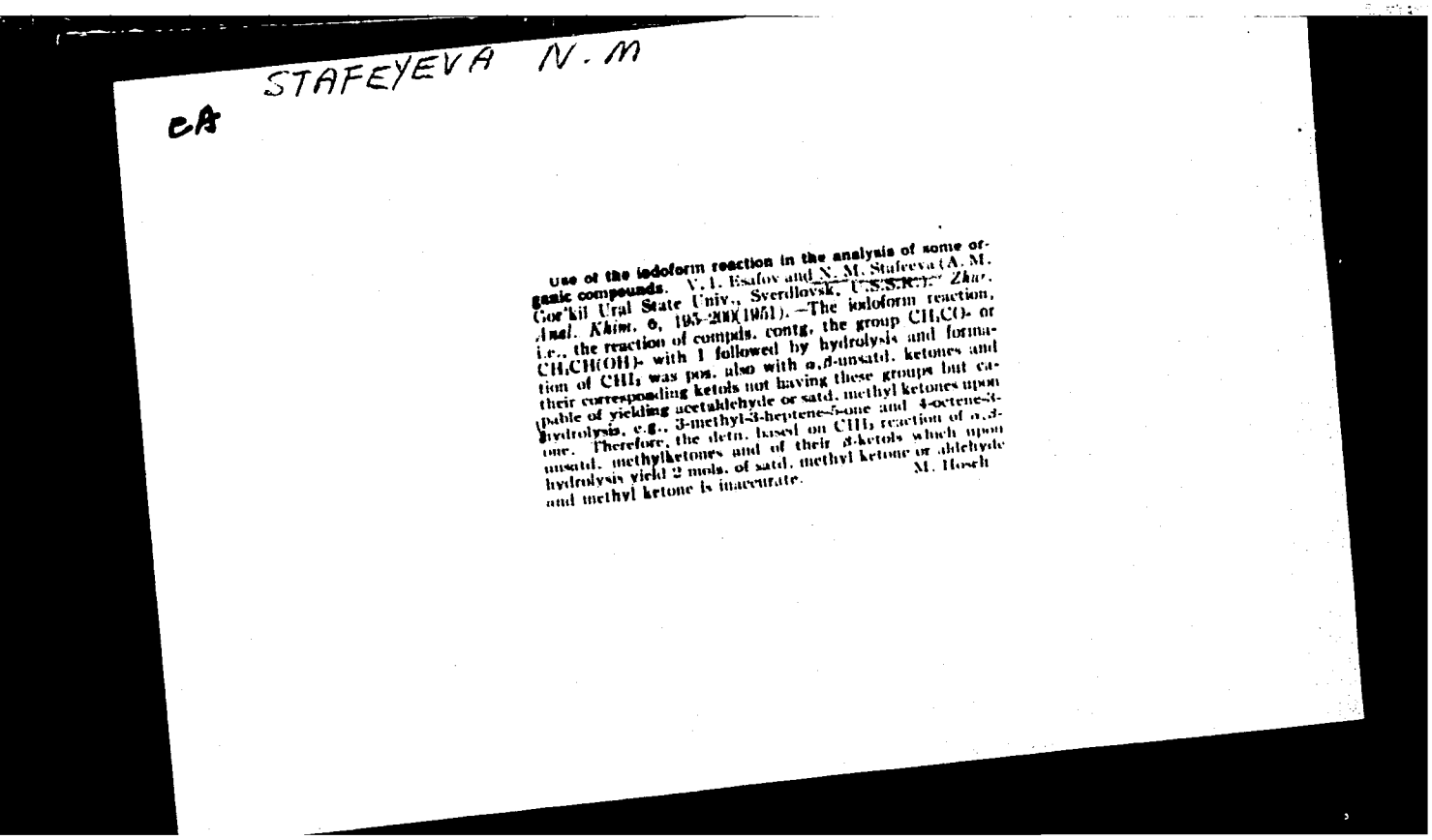
SUB CODE: 11

Card 2/2 nlp

MOLKIN, G.S.; STAFEYEVA, A.V.

Swamps of the upper Zeya valley. Bot.zhur. 49 no.10:1446-1454 O '64.
(MIRA 18:1)

1. Leningradskoye otdeleniye instituta Gidroproyekt.



STAFEYEVA N.M

CA

Use of the iodoform reaction in the analysis of some organic compounds. V. I. Esafov and N. M. Stafeeva (A. M. Gor'kii Ural State Univ., Sverdlovsk, U.S.S.R.). *Zhur. Anal. Khim.* 6, 195-200(1951). —The iodoform reaction, i.e., the reaction of compds. contg. the group CH_3CO- or $CH_3CH(OH)$- with I followed by hydrolysis and formation of CHI_3 was pos. also with α,β-unsatd. ketones and their corresponding ketols not having these groups but capable of yielding acetaldehyde or satd. methyl ketones upon hydrolysis, e.g., 3-methyl-3-heptene-5-one and 4-octene-3-one. Therefore, the detn. based on CHI_3 reaction of α,β-unsatd. methylketones and of their β-ketols which upon hydrolysis yield 2 mols. of satd. methyl ketone or aldehyde and methyl ketone is inaccurate. M. Hosch

STAFEYEVA,N. M.

USSR/Chemistry - Metallurgy

Card 1/1

Authors : Tatievskaya. E. P., Chufarov, G. I., and Stafeyeva, N. M.

Title : Reduction of cupric oxides with graphite

Periodical : Zhur. Fiz. Khim., 28, Ed. 5, 843 - 850, May 1954

Abstract : The rate of reduction of CuO and Cu_2O with graphite in vacuum and in the presence of gaseous reaction products was investigated. Pure carbon dioxide was found to be the product of the reduction reaction. The rate of reduction of cupric oxides with graphite in the presence of a gaseous reaction product is greater than in vacuum which indicated the participation of the gaseous phase in the reduction process. The reduction with a solid reducing agent consists of two phases: reduction of the oxide with carbon monoxide and the reaction of the formed CO_2 with the graphite. Nineteen references: 14-USSR, 2-German, 2-English and 1-USA. Graphs, drawing.

Institution : Acad. of Sc. USSR, Ural Branch, Institute of Chemistry and Metallurgy, Sverdlovsk

Submitted : Aug. 23, 1953

CHUFAROV, G.I.; TATIYEVSKAYA, Ye.P.; ZHURAVLEVA, M.G.; AVERBUKH, B.D.; LISNYAK, S.S.; ANTONOV, V.K.; BOGOSLOVSKIY, V.N.; STAFEYEVA, N.M.

Kinetics and mechanism of the reduction of metal oxides and chemical compounds. Trudy Inst. met. UFAN SSSR no.2:9-40 '58. (MIRA 12:4)

(Oxidation-reduction reaction) (Metallurgy)

5.2200(c)
18.9100

SOV/126-8-5-17/29

AUTHORS: Stafeyeva, N.M., Bogoslovskiy, V.N., Chufarov, G.I., and Subbotina, V.A.

TITLE: Reduction of Copper Ferrite with Graphite

PERIODICAL: Fizika metallov i metallovedeniye, Vol 8, 1959, Nr 5, pp 740-746 (USSR)

ABSTRACT: The authors describe their investigation of the kinetics and mechanism of the reduction of the tetragonal and cubic forms of copper ferrite $CuFe_2O_4$ with graphite in vacuum. The graphite powder was prepared by grinding Acheson electrodes and calcination at 1200 °C without air and in a vacuum at 1000 °C. The ferrite was obtained from a mixture of the composition $CuO.Fe_2O_3$ by heating in air at 1000 °C for 30 hours. By cooling rapidly in water the cubic form was obtained; holding at 700 °C and cooling slowly gave the tetragonal form. For the reduction a previously described (Ref 6) apparatus with a quartz spring balance was used, the sample weight being 0.5 g ferrite and 0.15 g graphite. Preliminary degassing of the thoroughly mixed sample was effected at 300 °C and 10^{-5} mm Hg. The weight-loss was determined together with the corresponding weight of

Card 1/3

Reduction of Copper Ferrite with Graphite

carbon dioxide evolved (trapped in a low-temperature trap) and from the difference the weight of carbon monoxide was calculated. The solid reaction products were studied by X-ray diffraction, the lattice parameters being determined by graphical extrapolation. Fig 1 shows rates of reduction as functions of degree of reduction at 650, 700, 750, 800, 900 and 1000 °C for tetragonal ferrite; Fig 2 shows the curve for 900 °C. The corresponding curves for the tetragonal and cubic ferrites are compared in Fig 3. Fig 4 shows degrees of reduction as functions of time for the tetragonal form at 800 and 900 °C, and Fig 5 the lattice parameter of this ferrite with respect to reduction temperature. For both forms the reduction occurs in a stepwise manner: $CuFe_2O_4 \rightarrow Cu + Fe_3O_4$; $Fe_3O_4 \rightarrow FeO$; $FeO \rightarrow Fe$. At 650, 700, 750, and 800 °C only the first stage occurs, at 900 °C and over all three. The reduction rates of the first and third stages show a maximum. By reducing the tetragonal form above the transformation temperature a solid solution of iron in copper is obtained, this being associated with the simultaneously occurring process of the transformation

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SOV/126-8-5-17/29

Reduction of Copper Ferrite with Graphite

of the tetragonal copper-ferrite lattice into the cubic. The authors suggest the following reduction mechanism. As oxygen is removed from the ferrite surface an excess of iron and copper ions is produced. Copper being less firmly attached to oxygen forms a metallic phase, while the iron diffuses into the ferrite particle, displacing copper. Part of the trivalent iron ions are reduced to the bivalent form, the ferrite lattice then approximating to that of magnetite. After all the ferrite has been converted to magnetite the reduction of the latter begins, which proceeds as described by Arkharov, Bogoslovskiy, Zhuravleva and Chufarov (Ref 7).

Card 3/3

There are 5 figures, 1 table and 7 references, of which 3 are Soviet, 2 French, 1 English and 1 Acta Crystallographica.

ASSOCIATION: Institut metallurgii UFAN SSSR (Institute of Metallurgy, Ural Branch of Acad.Sci. USSR)

SUBMITTED: March 18, 1959

66427

SOV/20-128-6-32/63

5 (2) 18.7110, 15.2000

AUTHORS: Stafeyeva, N. M., Bogoslovskiy, V. N., Chufarov, G. I., Corresponding Member AS USSR, Subbotina, V. A.

TITLE: Reduction of Copper Ferrite by Graphite

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1210 - 1213 (USSR)

ABSTRACT: The authors investigated the kinetics and mechanism of the reduction of tetragonal and cubical copper ferrite in the vacuum. The graphite used for this purpose was prepared from pulverized Acheson electrodes by roasting at 1200° without access of air, then at 1000° in the vacuum. The ferrite was annealed in the air in a mixture of $CuO \cdot Fe_2O_3$ at 1000° for 30 hours. The products of sintering were exposed for 3 hours at 700° for obtaining a product with tetragonal lattice, and cooled down together with the furnace. The cubical form was obtained by quenching in water directly after annealing. The ferrite quantity weighed was carefully pulverized with graphite. The experiments were made in a vacuum apparatus (Ref 6). The reduction was carried out both below the point of transformation (760°) of tetragonal ferrite

Card 1/3

Reduction of Copper Ferrite by Graphite

into the cubical form (spinel), i.e. at 650, 700 and 750°, and above this point (800, 900, 1000°). Figures 1 and 2 show the curves of reduction of tetragonal ferrite. Below 900°, a low-percentage reduction (11,18,24 and 35%, respectively) was attained. At 900 and 1000°, the sample was reduced with 100%. The initial stage of reduction exhibits the highest reaction rate. Then it falls rapidly, and is very low at a reduction of 40-50%. Above 50%, the reaction is again accelerated (Fig 2, right-hand side). Figure 3 compares kinetic curves representing the dependence of the reduction rate of tetragonal and cubical ferrite on the reduction degree at 700, 800 and 1000°. This shows that the reduction rate of cubical ferrite, at equal temperatures, is lower than that of tetragonal ferrite. Besides, there is no maximum rate in the 1st stage, in the case of cubical ferrite. At the beginning, the gaseous reaction products consist of CO and CO_2-mixture (60-65% CO_2). After a 70% reduction, they consist of almost pure CO. Subsequently, the roentgenogram of the solid reaction products is discussed, and a presumable mechanism of the crystal-chemical transformation during the reduction of the two forms is suggested: $CuFe_2O_4 \rightarrow Cu + Fe_3O_4$; $Fe_3O_4 \rightarrow FeO$;

Card 2/3

66427

Reduction of Copper Ferrite by Graphite SOV/20-128-6-32/63

FeO → Fe. The reconstruction of the lattice of tetragonal ferrite into cubical ferrite proceeds simultaneously with the reduction process, and influences the peculiarities of the latter. There are 3 figures and 7 references, 3 of which are Soviet.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences, USSR)

SUBMITTED: June 22, 1959

Card 3/3

S/020/61/139/005/012/021
B103/B217

AUTHORS: Bogoslovskiy, V. N., Stafeyeva, N. M., and Chufarov, G. I., Corresponding Member AS USSR

TITLE: Reduction of copper ferrite $CuFeO_2$ by graphite

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 5, 1961, 1105-1106

TEXT: The authors studied, by means of graphite, the reduction kinetics of ferrite of monovalent copper, $Cu^{1+}Fe^{3+}O_2^{2-}$, of rhombohedral structure, and the crystallochemical transformations occurring. The ferrite was produced by sintering a mixture of stoichiometric composition $Cu_2O + Fe_2O_3$ during 28 hr at 1000°C in a CO_2 current. The specimens obtained were monophase (stated by x-ray diffraction). Reduction by graphite was conducted in vacuum of approximately 10^{-2} mm Hg. Methods have been described in detail (Fiz. met. i metalloved., 8, 740 (1959)). Experimental results at 900, 950, 1000, and 1050°C are given in Fig. 1. It is concluded that copper ferrite is reduced gradually. The process stops with 25% reduction at 900°C. Reduction

Reduction of copper ferrite $CuFeO_2$ ...

is more intensive at higher temperatures. First, the reaction is retarded (up to 50% reduction), then, however, accelerated. CO_2 and CO are the gaseous reaction products. Only CO_2 forms up to 33% reduction, from 50% reduction the ratio CO : CO_2 = 1 : 1. The CO_2 quantity gradually decreases with further reduction. The stepwise character of this reduction is confirmed by x-ray diffraction pattern in the solid phases at different reduction degrees. Copper and magnetite (the latter gives a spinel diffraction pattern) are detected besides initial ferrite in an early stage of reduction. Initial ferrite vanishes in 30% reduction whereas wüstite appears at 40%. Autocatalytic wüstite reduction begins after removal of 50% oxygen; copper, wüstite, and iron are detected in the solid reaction products. $CuFeO_2$ does not form solid solutions with magnetite. This was confirmed by the dependence of the oxygen equilibrium tension in the gaseous phase on the reduction degree. The exact results of this study are to be published later. It is the authors' opinion that no remarkable volume diffusion of metal cations or oxygen ions by the layers of solid reaction products occurs, since there is no mutual solubility between initial oxide and its reduction products. Surface diffusion plays an important part in this process. It

S/020/61/139/005/012/021
B103/B217

Reduction of copper ferrite $CuFeO_2$ ...

leads to a growth of copper and magnetite crystals on the surface of ferrite particles during reduction. In the fine powder used by the authors, ferrite was transformed to magnetite and copper sooner than magnetite reduction began. There are 1 figure and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The three references to English-language publications read as follows: A. Pabst, Am. Min., 31, 539 (1946); C. Delorme, F. Bertaut, J. Phys. Rad., 14, 129 (1953); W. Soller, A. J. Thompson, Phys. Rev., 47, 644 (1935);

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Ural Branch of the Academy of Sciences USSR)

SUBMITTED: April 21, 1961

Card 3/5

STAFEYEVA, N.M.; BOGOSLOVSKIY, V.N.; SHCHEPETKIN, A.A.; ZHURAVLEVA, M.G.; CHUFAROV, G.I.

Equilibrium conditions in the reduction of copper ferrite $CuFe_2O_4$ by hydrogen. Dokl. AN SSSR 146 no.4:874-876 O '62. (MIRA 15:11)

1. Institut metallurgii Ural'skogo filiala AN SSSR.
2. Chlen-korrespondent AN SSSR (for Chufarov).

(Copper ferrate)
(Hydrogen)

STAFEYEVA, N.M.; CHUFAROV, G.I.

Reduction of copper ferrites by hydrogen. Zhur. prikl. khim. 36 no.10:2296-2297 O '63. (MIRA 17:1)

L 12902-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3003555 S/0020/63/151/002/0347/0349

AUTHORS: Stafeyeva, N. M.; Shchepetkin, A. A.; Bogoslovskiy, V.N.; Zhuravleva, M.G.; Chufarov, G.I. (Corr. member, Academy of Sciences SSSR)

TITLE: Study of equilibrium condition during hydrogen reduction of ferrite Mg sub 0.5 Mn sub 0.5 Fe sub 2 O sub 4

SOURCE: AN SSSR. Doklady, v. 151, no. 2, 1963, 347-349

TOPIC TAGS: equilibrium conditions, hydrogen, hydrogen reduction, ferrite, magnesium ferrite, manganese ferrite, solid phase, lattice, S-ray analysis

ABSTRACT: Reduction of ferrite Mg sub .5Mn sub .5Fe_2O_4 was studied under equilibrium conditions at 800, 900 and 1000 degrees C. Partial pressure of oxygen during dissociation of the ferrite was calculated. Composition of solid phases existing during the various reduction stages was determined. Ferrite Mg sub .5Mn sub .5Fe_2O_4 is a solid solution of magnesium and manganese ferrites with a 1:1 molar ratio. The original sample was obtained by heating a mixture of the required

Card 1/3

amounts of MgO, MnO and Fe_2O_5 in CO_2 atmosphere at 1200 degrees for 30 hours. Reduction was carried out in a closed evacuated system through which a mixture of hydrogen and water vapor was circulated until equilibrium was reached. Water vapor was maintained at a pressure equal to that of saturated water vapor at 0 degrees C. Partial pressure of hydrogen in the gaseous equilibrium mixture was determined after freezing out the water vapor in a trap immersed in liquid nitrogen. Partial pressure of oxygen was determined from the values $K = \frac{P_{H_2O}}{P_{H_2}}$. Extent of reduction was determined from the hydrogen consumption. A reduction of 100% was assumed for an oxide having the conposition Mg sub .5Mn sub .50. Solid phases existing at equilibrium were subjected to X-ray analysis (Debye method and with a camera with a 57.3mm diameter). Photographs were taken under FeK illumination using a manganese filter. Relationships between partial pressure of oxygen at equilibrium and the extent of reduction of the ferrite Mg sub .5Mn sub .5Fe_2O_4 at 800, 900 and 1000 degrees C are presented. Relationships between the size of lattices

L 12902-63
ACCESSION NR: AP3003555

in the three solid phases and the extent of reduction, as well as relationships between the concentration of the various phases and the extent of ferrite reduction are given. Orig. art. has: 3 figures.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR, Sverdlovsk (Metallurgical Institute, Ural branch, Academy of Sciences, SSSR)

SUBMITTED: 01Apr63 DATE ACQ: 30Jul63 ENCL: 00

SUB CODE: CH NO REF SOV: 004 OTHER: 006

Card 3/3

STAFEYEVA, N.M.; ZHURAVLEVA, M.G.; BOGOSLOVSKIY, V.N.; CHUFAROV, G.I.

Effect of Na_2CO_3 and K_2CO_3 additions on the reduction of oxides and copper ferrites. Zhur. neorg. khim. 9 no.2:447-450 F'64. (MIRA 17:2)

ACCESSION NR: AP4039618 S/0076/64/038/005/1135/1141

AUTHOR: Shchepetkin, A. A. (Sverdlovsk); Stafeyeva, N. M. (Sverdlovsk); Bogoslovskiy, V. N. (Sverdlovsk); Zhuravleva, M. G. (Sverdlovsk); Chufarov, G. I. (Sverdlovsk)

TITLE: Study of equilibrium conditions during the reduction of magnesium-manganese ferrites

SOURCE: Zhurnal fizicheskiy khimii, v. 38, no. 5, 1964, 1135-1141

TOPIC TAGS: magnesium-magnetite ferrite, ferrite dissociation, ferrite reduction, equilibrium oxygen pressure, ferrite crystalline structure, spinel phase, magne- , sioferrite, magnetite

ABSTRACT: The equilibrium oxygen pressure during the dissociation of magnesium-manganese ferrites (I) of the composition $Mg_cMn_{1-c}Fe_2O_4$ (c = 0.1 to 1.0) have been determined and some peculiarities of the crystalline structure of I of various compositions have been studied. This work was done because such data are helpful for the preparation of ferrites and the understanding of changes occurring in service. The equilibrium conditions in the reduction of I were determined in a closed vacuum apparatus with a circulating $H_2 + H_2O$ mixture. The equilibrium

Card 1/3

ACCESSION NR: AP4039618

oxygen pressure was calculated from the formula $p_{O_2}^{1/2} = K_p K_{H_2O}$, where K_p is the H_2O/H_2 pressure ratio in an equilibrium gas mixture and K_{H_2O} is the equilibrium constant of the water vapor dissociation. X-ray analysis of I and of their reduction products was carried out by the Debye method. It was shown that the oxygen pressure remains almost constant (10^{-13} atm) with an increase of the magnesioferrite content in the solid solution from 0 to 50 mol. %; the pressure increased sharply (to 10^{-11} atm) with an increase of the magnesioferrite content from 50 to 100 mol. %. The oxygen pressure dropped sharply in the course of the reduction of I by hydrogen. X-ray analysis of the solid phases formed during the reduction revealed a correlation between the oxygen pressure and the chemical characteristics of the crystals (magnesium ion fraction in the tetrahedral lattice nodes) of I. It was shown, in particular, that during the reduction the equilibrium oxygen pressure drops with a decrease in the magnesioferrite content and an increase in the magnetite content in the spinel phase and approaches, at 33% reduction, the dissociation pressure of magnetite. Orig. art. has 7 figures.

ASSOCIATION: Institut metallurgii Ural'skogo filiala AN SSSR (Institute of Metallurgy, Ural Branch, AN SSSR)

Card 2/3

MEN', A.N.; STAFEYEVA, F.M.; BOGOSLOVSKIY, V.N.; ZHURAVLEVA, M.G.; CHUFAROV, G.I.

Thermodynamic analysis of equilibrium in the dissociation of ferrites. Dokl. AN SSSR 156 no. 4:912-915 Je '64. (MIRA 17:6)

1. Institut metallurgii, Sverdlovsk. 2. Chlen-korrespondent AN SSSR (for Chufarov).

L 21064-65 EED-2/EWT(l)/EWT(m)/EWP(b)/T/EWP(t) AFWL/SSD/AEDC(a)/AS(mp)-2/ESD(dp) JD

ACCESSION NR: AP4044888 S/0020/64/157/006/1441/1444

AUTHOR: Men', A. N.; Stafeyeva, N. M.; Bogoslovskiy, V. N.; Zhuravleva, M. G. Chufarov, G. I. (Corresponding member AN SSSR)

TITLE: Concerning the determination of the concentration dependence of some thermodynamic functions of solid solutions of ferrites

SOURCE: AN SSSR. Doklady*, v. 157, no. 6, 1964, 1441-1444

TOPIC TAGS: thermodynamic function, solid solution, ferrite, concentration dependence, configurational mixture entropy

ABSTRACT: The statistical computation of thermodynamic functions of solid solutions is complicated because of the large number of parameters which characterize the interactions of particles in the solid phase. Therefore, reasonable approximations are needed which give a good agreement with the experiment. The simplest statistical approach is the computation of the configurational entropy of a mixture without consideration of the near order. The change of the configurational entropy $\Delta S^{cont.}$ for the solid solutions of copper ferrite at a given concen-

Card 1/2

L 21064-65
ACCESSION NR: AP4044888

tration c with copper magnetite is given as a function of the equilibrium degree λ of inversion of solid solution at a given temperature and λ_0 of the inversion of copper ferrite at the same temperature. If the function $\lambda(c)$ is not known, it can be assumed, in the first approximation, that $\lambda = \lambda_0 c$. For the calculation of ΔS^{cont}, the results of previous author's work (Fiz. tveral. tela, 4, 898 (1962)) are used. Orig. art. has: 3 figures and 12 equations

ASSOCIATION: Institut metallurgii Svepdlovsk (Institute of Metallurgy)

SUBMITTED: 20Apr64 ENCL: 00

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Card 2/2

S/190/60/002/010/015/026
B004/B054

AUTHORS: Sazhin, B. I. and Stafeyeva, N. P.

TITLE: Investigation of the Electrical Conductivity of Polymers. II. Polytrifluoro-chloro Ethylene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10, pp. 1541-1547

TEXT: The authors aimed at obtaining more data on the electrical conductivity of Ф-3 (F-3) polytrifluoro-chloro ethylene. Silver electrodes were sprayed in vacuo on the specimens pressed at 150 kg/cm^2 and 250°C. The volume resistivity ϱ_v between 15 and 230°C was determined. The currents were recorded by a tube electrometer on the band of an ЭПП-09 (EPP-09) potentiometer. Fig. 1 shows log i = f(log t) and log ϱ_v = f(log t). The Curie equation $i = i_0 \tau^{-n}$ (i_0 and n are constants) holds for F-3. ϱ_v is dependent on τ. In the function log ϱ_v = f(1/T), the curve shows a salient point near the vitrification temperature T_v (Fig. 2). At $T < T_v$, ϱ_v mainly depends on the polarization current, at $T > T_v$, on the translational

Card 1/2

Investigation of the Electrical Conductivity of Polymers. II. Polytrifluoro-chloro Ethylene

S/190/60/002/010/015/026
B004/B054

conductivity. The latter is reduced by "electropurification" by means of the passage of an amount of electricity $Q = 2.6 \cdot 10^{-3}$ coulombs. Electropurification increases with rising voltage at constant temperature (Fig.4). From the measurement of the imaginary part ε'' of the dielectric constant, of the exponent n of the Curie equation, and of the log Q_d (Q_d = amount of discharged electricity) as a function of temperature in the alternating-current field (Fig. 5) the authors conclude that in F-3 there occurs a dipole-radical polarization ($T < T_v$), a dipole-elastic polarization ($T > T_v$), and a motion of dipoles in the crystalline phase. The authors thank V. M. Marakhonov for his assistance. There are 5 figures and 11 references: 4 Soviet, 2 US, 1 British, and 4 German.

ASSOCIATION: Nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass (Scientific Research Institute of Polymerization Plastics)

SUBMITTED: May 23, 1960

Card 2/2

STAFEYEVA, Ye.N. (Yaroslavl', ul. B. Oktyabr'skaya, d.36, kv.3)

Cytological control of the results of radiation therapy of cervical cancer. Vop.onk. 5 no.6:722-726 '59. (MIRA 12:12)

1. Iz kafedry akusherstva i ginekologii (zav. - prof. Ye.K. Aleksandrov) Yaroslavskogo meditsinskogo instituta.

(CERVIX NEOPLASMS, ther.
radiother., with cytol. control of results (Rus))
(RADIOTHERAPY, in various dis.
cancer of cervix, cytol. control of results (Rus))

STAFEYEVA, Ye.N.

Problem of the cytological diagnosis of cancer of the cervix uteri. Akush.i gin. 35 no.5:65-68 S-O '59. (MIRA 13:2)

1. Iz kafedry akusherstva i ginekologii (zaveduyushchiy - prof. Ye.K. Aleksandrov) Yaroslavskogo meditsinskogo instituta.
(CERVIX UTERI, neoplasms)
(CYTODIAGNOSIS)

STAFEYEVA, Ye. N.

Cand Med Sci - (diss) "Significance of cytological studies in the complex of clinical observations for the prophylaxis and early diagnostics of cancer of the neck of the uterus." Yaroslavl', 1961. 16 pp; (Yaroslavl' Med Inst); 200 copies; price not given; (KL, 6-61 sup, 240)

STAFEYEVA, Ye. N.

Clinical evaluation of dyskariosis. Akush. i gin. no.3:95-98 '61.
(MIRA 14:12)

1. Iz kafedry akusherstva i ginekologii (zav. - prof. Ye. K. Aleksandrov) Yaroslavskogo meditsinskogo instituta.

(CANCER) (CELL NUCLEI)

STAFEYEVA, Ye.N. (Yaroslavl', Respublikanskaya ul., 56, kv.27)

Significance of cytological examinations for the early diagnosis and prevention of cancer of the cervix uteri. Vop.onk. 7 no.11: 91-95 '61. (MIRA 15:5)

1. Iz kafedry akusherstva i ginekologii (zav. - prof. Ye.K. Aleksandrova) Yaroslavskogo meditsinskogo instituta (dir. - N.Ye. Yarygin).

(UTERUS--CANCER)

STAFEYEVA, Ye.N., kand. med. nauk

Cesarean sections in Yaroslavl for a 5-year period. Vop. okh. mat. i det. 8 no.7:64-66 Jl '63. (MIRA 17:2)

1. Glavnyy akusher-ginekolog Yaroslavlya.

STAFF, F.

S. Sakowicz' "Outline of Fish Economy in Open Waters;" a book review. p. 27. (GOSPODARKA RYBNA, Vol. 5, No. 3, Mar. 1953 Warszawa, Poland)

SO: Monthly List of East European Accessions, L.C., Vol. 3, No. 4, April, 1954

STAFFA, A.

Reliable timer switch. p. 390.

SDELOVACI TECHNIKA. (Ministerstvo strojirenstvi) Praha, Czechoslovakia.
Vol. 7, no. 10, Oct. 1959.

Monthly List of East European Accession, (EEAI), LC, Vol. 8, No. 12, Dec. 1959
Uncl.

STAFFA, E.

"Research in the Field of Labor Safety", P. 385. (TECHNICKA PRACA, Vol. 6, No. 7, July 1954, Bratislava, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 1, Jan. 1955, Uncl.

STAFFA, E.

Jiru, E. How to keep all personal safety devices in order. p. 617. TECHNICKA PRACA, Bratislava, Vol. 6, no. 10, Oct. 1954.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, No. 6, June 1956, Uncl.

STAFFA, E.

Prospects for further development of safety at work, p.158. (Technika Praca. Bratislava. Vol. 9, no. 3, Mar. 1957.)

SO: Monthly List of East European Accessions (EEAL) LC., Vol. 6, no. 7, July 1957. Uncl.

STAFFA, T.

Safety painting of machine tools.

P. 142. (TECHNICKA PRACA) (Bratislava, Czechoslovakia) Vol. 10, no. 2, Feb. 1958

SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

STAFFA, E.

"Proper position is a condition of productive work." p. 373.

TECHNICKA PRACA. (Rada vedeckych technickych spolocnosti pri Slovenskej akademii vied). Bratislava, Czechoslovakia, Vol. 11, No. 5, May 1959.

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 8, August 1959.
Uncla.

POLAND/ Forestry. Forestry and Forest Cultivation.

Abs Jour: Referat Zh.-Biol., No 6, 1957, 22588

Author : Staffa, KAROL
Inst : C
Title : Willow Cultivation for Obtaining Raw Materials for the Cellulose-Paper Industry.

Orig Pub: Przegle. papiern., 1956, 12, No 8, 223-228

Abstract: Results of investigations are described which were conducted in a number of scientific-experimental stations for the purpose of developing the fastest growing varieties of willows, and to study improved agrotechnical methods of their cultivation. Attention is given to the fact that solving the problem of willow wood cellulose production may aid the liquidation of raw material deficiency for the cellulose industry.

Card : 1/1

CH STAFFA V.

II-H

Dose-effect curves on isolated guinea-pig intestine. R. Zadina and V. Šťáfa (Univ. Prague). *Českoslov. farm.* 1, 106-9(1952).—Dose-effect curves were constructed for various drugs. Disregarding the height of the threshold dose, the curves have different heights and slopes on the semilog scale. The curve of arecoline is the highest and that of histamine is higher than that of acetylcholine. The curve of $BaCl_2$ is low. Dagmar Hubíková

STAFI, I.

STAFI, I. The terraces of the Uslava River. p. 28.

Vol. 62, no. 1, 1957
SBORNIK
GEOGRAPHY & GEOLOGY
Czechoslovakia

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DOBRE, Paula, chimist; TOADER, Ion, ing.; STAFIE, Ion, ing.

Fight against weeds on railroads" by [ing.] Dem. Urma. Reviewed by Paula Dobre, Ion Toader, Ion Stafie. Rev cailor fer 10 no.10: 566 0 '62.

1. Sef laborator Institutul de Cercetari pentru Transporturi si Telecomunicatii (for Dobre). 2. Inginer principal plantatii si amenajarea zonei Dir.L. (for Toader). 3. Inginer principal serviciul tehnic Dir. L. (for Stafie).

STAFIE, Ioan, ing.

Snow fence metallic panels. Rev cailor fer 10 no.11:596-598 N '62.

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STAFIE, Ioan, ing.

Use of funficidal salts to prolong the duration of wooden railway ties. Rev cailor fer 11 no.6:339-342 Je '63.

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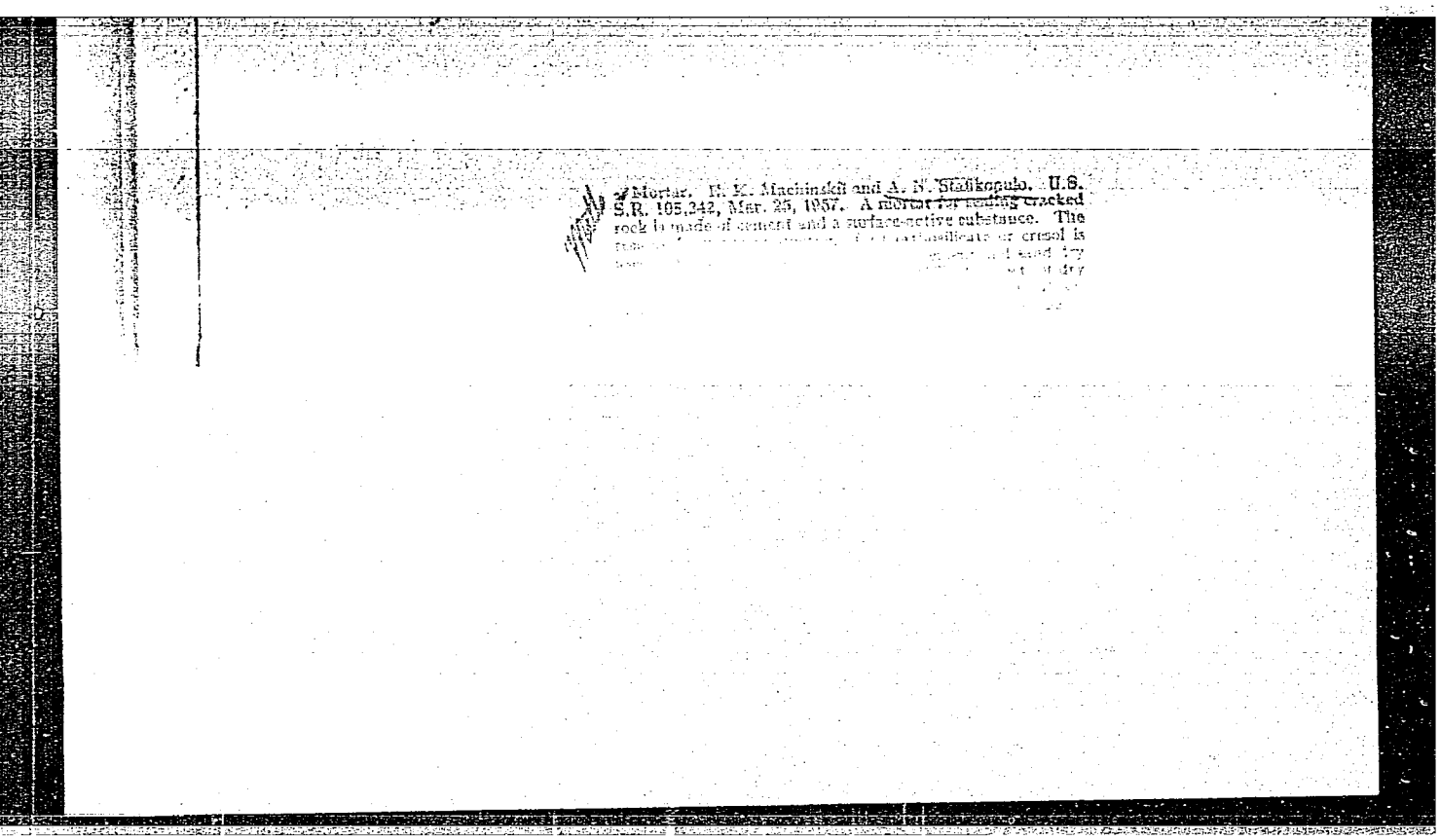
More about the "matched three." p. 6; ROLNIK SPOLDZIELCA. (Centrala Rolnicza Spoldzielni "Samopomoc Chlopska") Warszawa; Vol. 8, no. 26, June 1955.

SOURCE: East European Accessions List (EEAL), Library of Congress, Vol. 4, No. 12, December 1955.



Mortar. P. K. Machinskii and A. N. Stalikopulo. U.S.S.R. 105,242, Mar. 25, 1957. A mortar for sealing cracked rock is made of cement and a surface-active substance. The

Sov/93-58-4-3/19

AUTHOR: Machinskiy, Ye.K.; Stafikopulo, A.N.; and Bulatov, A.I.

TITLE: Unburned Slag and Sand Cements for Plugging Wells Having Bottom Hole Temperatures up to 200°C (Shlako-peschanyye bezobzhigovyye tsementy dlya tamponazha skvazhin s zaboynymi temperaturami do 200°C)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 4, pp 15-20 (USSR)

ABSTRACT: The article presents laboratory data on unburned slag and sand cements for plugging oil wells with bottom hole temperatures up to 200°C. This type of cement was developed by the GrozNII laboratory on the basis of research carried out by G. Sivertsev [Ref. 11] and R.M. Lezhoyev of the Giprotsement Institute [Ref.7]. The laboratory experiments were carried out with pulverized slag similar in fractional composition to the cement produced by the Karadag plant. The flow test was carried out by the AzNII cone method, and the modulus of activity which is the relation $\frac{Al_2O_3}{SiO_2}$ was determined in accordance with the GOST 3476-52 specification. The setting time and hardness were determined by means of autoclaves of GrozNII design. Table I shows the setting time of the slag slurries in relation to the storage time of the pulverized slag. The tests have established that the blast furnace slag from the metallurgical plants im. Stalin and "Svobodnyy sokol" are most suitable for the production of plugging cements, and that the slag from the Frunze metallurgical

Card 1/2

plant is unsuitable. It was also determined that the setting time and strength of such cements can be controlled by additions of silica or silica-magnetic sands. At temperature ranging from 150 to 200°C and pressures from 500 to 700 atm. the setting time was from several minutes up to 24 hours, depending on the sand content. After 48 hours of hardening the strength of the cement began to vary. But cements containing standard additions of sand displayed greater strength than GOST 1581-42 specification plugging cement. The authors conclude that research in slag cement must continue in 1958, but that the available data make it possible to produce an experimental batch of slag cement for testing in deep wells. There are 11 Soviet references and 1 table.

1. Petroleum industry 2. Wells--Maintenance 3. Cement--Properties 4. Slags
Card 2/2 --Applications 5. Wells--Temperature factors

STAFINIAK, Oleh, Dr (Ostrava I, Velka 18)

Suture of surgical wounds. Lek. listy 9 no.13:294-298 Jl '54.

1. Z Chirurgickeho oddeleni nemocnice Ostrava I. Prednosta doc. Dr Cestmir Vohnout.
(SUTURES,
*technics)

VOHNOUT, Cestmir; STAFINIAK, Oleh

Surgical replacement of the extrahepatic bile ducts. Polski przegl.chir. 27 no.5:417-424 May '55.

1. Z Chirurgicznego oddzialu szpitala Ostrava I;Ostrava I, Postovni prihradka 180.

(BILE DUCT, COMMON, surgery, reconstruction)

VOHNOUT, C. Dr. Doc.; STAFINIAK, O. Dr.

Surgical of wounds of hand tendons. Acta chir. orthop. traum cech. 23 no. 1:11-16 Feb 56.

1. Z chirurgickeho oddeleni nemocnice Ostrava I., prednosta doc. Dr. Cestmir Vohnout

(HAND, wounds and injuries, tendons, surg. (Cz)
(WOUNDS AND INJURIES, hand tendons, surg. (Cz)

VOHNOUT, C., Doc., Dr.; STAFINIAK, O., Dr.

Operative substitution of the large bile passages. Rozhl. chir. 35 no.4:209-215 Apr 56.

1. Chirurgicke oddeleni OUNZ, nemocnice Ostrava I, prednosta doc. dr. Cestmir Vohnout. Literatura u autoru, Ostrava I, Nemocnicni 20.
(BILIARY TRACT, surg.
extrahepatic, reconstruction, technic (Cz))

Stafiniak, O

VOHNOUT, C.; STAFINIAK, O.

Personal experience & results of surgery of the tendons of the hand during the last 5 years. Rozhl. chir. 36 no.8:497-500 Aug 57.

1. Chirurgicke oddeleni nemocnice Ostrava I, prednosta doc. Dr. C. Vohnout a spoluzucastnena pracoviste.
(HAND, wounds & injuries
surg. (Cz))